

Application No. 09/171,049
Application No. 09/171,049
Atty docket No. JA 138
Response Dated September 24, 2003
Reply to Final Office Action Mailed June 29, 2003
Customer No. 27752

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1. (Currently Amended) An absorbent material comprising:
 - (a) absorbent gelling particles comprising a water-insoluble absorbent hydrogel forming polymer;
 - (b) a polycationic polymer;
 - (c) from about 1 % to about 10% of glue microfibers selected from the group consisting of:
 - i) tackifier modified polymers,
 - ii) pressure sensitive adhesives, and
 - iii) mixtures thereof; and
 - (d) a carrier layer;wherein the polycationic polymer is dispersed on the glue microfibers and is bonded to the absorbent gelling particles; and wherein at least a portion of the absorbent gelling particles, deposited onto the carrier layer, are fixed to the surface of the carrier layer and a majority of individual absorbent gelling particles are directly joined to an adjacent absorbent gelling particle by the glue microfibers in the dry state and wherein the glue microfibers are meltblown fibers.
2. (Original) The absorbent material of Claim 1, wherein the carrier layer is selected from the group consisting of a woven material and a nonwoven material.
3. (Original) The absorbent material of Claim 1, further comprising cellulose fibers dispersed in the absorbent gelling particles, wherein the cellulose fibers are adhered to the absorbent gelling particles by the glue microfibers.
4. (Original) The absorbent material of Claim 3, wherein the glue microfiber is selected from the group consisting of an elastomeric microfiber and a non-elastomeric microfiber.
5. (Original) The absorbent material of Claim 4, wherein the elastomeric microfiber is a thermoplastic polymeric meltblown microfiber.

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6. (Original) The absorbent material of Claim 5, wherein the thermoplastic polymeric meltblown microfiber is an elastomeric Styrene-Isoprene-Styrene block copolymer.
7. (Original) The absorbent material of Claim 4, wherein the non-elastomeric microfiber is selected from the group consisting water-soluble microfiber and water-insoluble microfiber.
8. (Original) The absorbent material of Claim 7, wherein the water-soluble microfiber is selected from the group consisting of polyethyloxazoline, polyvinylpyrrolidone, ethylenevinylacetate copolymer glue and mixtures thereof.
9. (Original) The absorbent material of Claim 1, wherein the polycationic polymer is selected from the group consisting of polyamines, polyimines, and mixtures thereof.
10. (Previously Presented) The absorbent material of Claim 9 wherein the polyamine is selected from the group consisting of:
 - (a) polymers having primary amine groups;
 - (b) polymers having secondary amine groups; and
 - (c) polymers having tertiary amine groups.
11. (Previously Presented) The absorbent material of Claim 10, wherein the primary amine is selected from the group consisting of a polyvinylamine, a polyallylamine and mixtures thereof.
12. (Previously Presented) The absorbent material of Claim 10, wherein the secondary amine is a polyethyleneamine.
13. (Previously Presented) The absorbent material of Claim 10, wherein the tertiary amine is selected from the group consisting of a poly N, N-dimethylalkyl amine, a poly-N-alkylamine, and mixtures thereof.

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14. (Original) The absorbent material of Claim 9, wherein the polyimine is selected from the group consisting of a polyethyleneimine, modified polyethyleneimines crosslinked with epihalohydrine, polyamidoamine grafted with ethyleneimine and mixtures thereof.
15. (Original) The absorbent material of Claim 1, wherein the absorbent gelling particles have an average particle size in the range of from about 10 μm to about 1000 μm .
16. (Original) The absorbent material of Claim 1, wherein the polycationic polymer chemically crosslinks to the water-insoluble absorbent hydrogel-forming polymer of absorbent gelling particles.
17. (Previously Presented) The absorbent material of Claim 1, wherein the absorbent material comprises from about 50% to about 90% of the absorbent gelling particle, from about 0.1% to about 10% of the polycationic polymer; and from about 5% to about 50% of the carrier layer by weight.
18. (Original) The absorbent material of Claim 1, wherein the polycationic polymer have a molecular weight of at least about 70,000.
19. (Original) An absorbent article comprising:
 - (a) a liquid pervious topsheet;
 - (b) a liquid impervious backsheet; and
 - (c) an absorbent core positioned between the topsheet and the backsheet, wherein the absorbent core comprises the absorbent material of Claim 1.
20. (Withdrawn) An absorbent material comprising:
 - (a) absorbent gelling particles comprising a water-insoluble absorbent hydrogel-forming polymer;
 - (b) polycationic polymer comprising a polycationic polymer; and

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(c) a carrier layer;

wherein the polycationic polymer fibers having a concentration of from about 80% to 99% by weight are bonded to the absorbent gelling particles; and the polycationic polymer fibers act as an adhesive between the absorbent gelling particles and the carrier layer.

21. (Withdrawn) The absorbent material of Claim 20, wherein the polycationic polymer fibers have a molecular weight of at least about 70,000.

22. (Withdrawn) An absorbent article comprising:

(a) a liquid pervious topsheet;

(b) a liquid impervious backsheet; and

(c) an absorbent core positioned between the topsheet and the backsheet, wherein the absorbent core comprises the absorbent material of Claim 20.

23. (Withdrawn) A method of making an absorbent material comprising:

(a) applying absorbent gelling particles comprising a water-insoluble absorbent hydrogel-forming polymer onto a carrier layer;

(b) applying glue microfibers onto the carrier layer; and

(c) applying a polycationic polymer onto the absorbent gelling particles to form a bond between the absorbent gelling particles and the polycationic polymer;

wherein the absorbent gelling particles adhere to the glue microfibers prior to the glue microfibers adhering to the carrier layer.

24. (Withdrawn) The method of making the absorbent material of Claim 23, further comprising the step of dispersing cellulose fibers into the absorbent gelling particles, wherein the glue microfibers act as an adhesive between the cellulose fibers and the absorbent gelling particles.

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25. (Withdrawn) The method of making the absorbent material of Claim 23, wherein the absorbent gelling particles, the glue microfibers and the polycationic polymer are applied, respectively, by a first air stream, a second air stream and a third air stream.
26. (Withdrawn) The method of making the absorbent material of Claim 25, wherein the first and second air stream are integrated prior to the absorbent gelling particles and the glue microfibers adhering the carrier layer.
27. (Withdrawn) The method of making the absorbent material of Claims 26, wherein the second air stream containing the glue microfibers has a temperature of from about 100 °C to about 400 °C.
28. (Withdrawn) The method of making the absorbent material of Claim 23, wherein the polycationic polymer is applied onto the carrier layer as a solution of water and the polycationic polymer.
29. (Withdrawn) The method of making the absorbent material of Claim 28, wherein the solution containing the polycationic polymer has a concentration of from about 0.1% to about 10% by weight.
30. (Withdrawn) The method of making the absorbent material of Claim 23, wherein the polycationic polymer is applied onto the carrier layer in a solid state.
31. (Withdrawn) The method of making the absorbent material of Claim 23, further comprising the step of heating the resulting material of step (c) at a temperature of from about 50 °C to about 300 °C so as to covalently bond the polycationic polymer to the water-insoluble absorbent hydrogel-forming polymer of the absorbent gelling particles.
32. (Withdrawn) A method of making an absorbent material, the method comprising the steps of:
 - (a) forming a first air stream comprising absorbent gelling particles comprising a water-insoluble absorbent hydrogel-forming polymer;

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- (b) forming a second air stream comprising glue microfibers;
 - (c) merging the second air stream with the first air stream to form an integrated air stream comprising a thorough mixture of the glue microfibers and the absorbent gelling particles;
 - (d) directing the integrated air stream onto a carrier layer;
 - (e) forming a third air stream comprising a polycationic polymer; and
 - (f) directing the third air stream onto the carrier layer so the polycationic polymer bonds to the absorbent gelling particles.
33. (Withdrawn) A method of making an absorbent material, the method comprising the steps of:
- (a) forming a first air stream comprising absorbent gelling particles comprising a water-insoluble absorbent hydrogel-forming polymer;
 - (b) forming a second air stream comprising a polycationic polymer;
 - (c) merging the second air stream with the first air stream to form an integrated air stream, wherein the polycationic polymer bonds to the absorbent gelling particles;
 - (d) forming a third air stream comprising glue microfibers;
 - (e) merging the integrated air stream with the third air stream to form a mixture air stream; and
 - (f) directing the mixture air stream onto a carrier layer so the absorbent gelling particles bonded to the polycationic polymer adhere to glue microfibers, and the glue microfibers adhere to the carrier layer.

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34. (Withdrawn) A method of making an absorbent material, comprising:

(a) applying polycationic polymer fibers comprising a polycationic polymer having a concentration of from about 80% to about 99% by weight onto absorbent gelling particles comprising a water-insoluble absorbent hydrogel-forming polymer; and

(b) applying the absorbent gelling particles onto a carrier layer;

wherein the polycationic polymer fibers act as an adhesive between the absorbent gelling particles and the carrier layer.

35. (Withdrawn) The method for making the absorbent material of Claim 34, wherein the polycationic polymer fibers have the molecular weight of at least about 70,000.

36. (Withdrawn) The method of making the absorbent material of Claim 34, wherein the polycationic polymer fibers and the absorbent gelling particles are applied, respectively, by a first air stream and a second air stream.

37. (Withdrawn) The method of making the absorbent material of Claim 36, wherein the first and the second air stream are integrated prior to the glue microfibers adhering to the carrier layer.

38. (Withdrawn) A method of making an absorbent material, the method comprising the steps of:

(a) forming a first air stream containing polycationic polymer fibers;

(b) forming a second air stream containing absorbent gelling particles comprising a water-insoluble absorbent hydrogel-forming polymer;

(c) merging the second air stream with the first air stream to form an integrated air stream, wherein the polycationic polymer fibers bond to the absorbent gelling particles; and

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(d) directing the integrated air stream onto a carrier layer so that the absorbent gelling particles bonded to the polycationic polymer fibers adhere to the carrier layer.

39. (Original) An absorbent article comprising the absorbent material of Claim 1.
40. (Original) The absorbent article of Claim 39, wherein the absorbent article is a diaper.
41. (Original) The absorbent article of Claim 39, wherein the absorbent article is a catamenial product.